Two new species of the genus *Mecyclothorax* Sharp from New Guinea (Coleoptera: Carabidae: Psydrinae)

Martin Baehr

Two new species of the psydrine genus *Mecyclothorax* Sharp from New Guinea are described: *M. lackneri* sp. n., from central Papua (former Irian Jaya), western New Guinea, and *M. kubor* sp. n., from central Papua New Guinea, in the eastern half of the island. The first species was collected at median altitude and is most closely related to *M. jiwikae* Baehr of the same region, but is distinguished by wider pronotum and even shorter elytra, and by the structure of the aedeagus. The second species was sampled at high altitude of Kubor Range and is closely related to *M. sedlaceki* Darlington of the nearby Bismarck Range, but is distinguished by its larger body size and the presence of five deeply impressed setiferous punctures on the elytra. A revised key to the New Guinean species of *Mecyclothorax* is presented. Additional records of *M. sedlaceki* Darlington from Mt. Wilhelm are presented.

Martin Baehr, Zoologische Staatssammlung, Münchhausenstr. 21, D-81247 München, Germany. martin.baehr@zsm.mwn.de

**Introduction**

The psydrine genus *Mecyclothorax* Sharp, 1903 is widely distributed in the area between Australia (Moore 1984, 1992, Moore et al. 1987, Baehr 2000, 2003), New Guinea (see below), New Caledonia (Jeannel 1944, Deuve 1987, unpublished records), New Zealand (Larochelle & Larivière 2001), Java (Louwerens 1949), Borneo (Baehr & Lorenz 1999), and far out in the Pacific on Tahiti (Perrault 1978, 1992) and Hawaii (Britton 1948, Liebherr 2005, 2007, 2008). In both latter archipelagos, the genus has developed its highest species diversity. Most probably the genus is of Australian origin; it is very widely distributed in the southern part of Australia and along the whole east coast. In view of their phylogenetic status the most plesiotypic species of the genus apparently occur in southern Australia.

In New Guinea the genus was repeatedly subject of descriptions of new species. Revisions (Darlington, 1962, 1971; Baehr, 1992, 1995, 1998, 2002) show that the mecyclothoracine fauna of New Guinea is only known from single or few specimens. It is yet unknown whether their recorded scattered occurrences simply demonstrates our limited knowledge, or whether they mirror their truly restricted ranges. Thus far, most species were recorded from central and eastern Papua (former Irian Jaya). In spite of much longer and better exploration, from the eastern half of the island (Papua New Guinea) only few species have been recorded. The extremely scattered records may reflect the yet absolutely inadequate sampling of these small beetles that probably are best collected by sieving or Berlese extraction of litter or soil. Apparently, such sampling methods so far have been very rarely employed.

As a conclusion, in New Guinea the genus *Mecyclothorax* is yet unknown from Owen Stanley Range, Huon Peninsula, the western part of Papua New Guinea, and also from the whole western part of Irian Jaya (now Papua) including Snow Mountains and Vogelkop Peninsula. Very probably species will be discovered in most of these areas in future, because the genus is as well distributed to the east of New Guinea as to the west.
Material and methods
The new species were detected within a sample of carabid beetles collected in western New Guinea and kindly sent on loan for identification from the Zoologisch Museum of the University of Amsterdam (ZMAN) and in the unidentified carabid material of the National Museum of Natural History Naturalis, Leiden (RMNH). The holotypes are located in these collections, one paratype of *M. lackneri* is stored in the working collection of the author at the Zoologische Staatssammlung, München (CBM). Additional records of *M. sedlaceki* Darlington were obtained from the collections of RMNH and of the Hungarian National Museum of Natural History, Budapest (HNMB).

For dissection of the male and female genitalia specimens were soaked in a wet jar for a night, then the genitalia were cleaned for a short while in hot 4% KOH. For the descriptions normal taxonomic methods have been used.

Measurements were taken using a stereo microscope with an ocular micrometer. Length has been measured from the apex of labrum to the apex of elytra. Length of pronotum was measured along midline, width of base of pronotum at the extreme tips of the basal angles. Measurements and ratios were obtained in the same manner as in Baehr (1992, 1995, 1998, 2002).

Recognition
A new key to the New Guinean *Mecyclothorax* is given below. For easier identification, figures from former papers (Baehr, 1992, 1995, 1998, 2002) are quoted where necessary. Although range is not a prima facie distinguishing character, the ranges of most species seem to be so restricted that they can be used as support for the differentiation of the species. Therefore, geographic and altitudinal ranges are included in the key as exactly as possible.

Revised key to the New Guinean *Mecyclothorax*

1. Elytral striae 3 and 5 with setiferous punctures. Wilhelmina Top (Gunung Trikora), central Papua (former Irian Jaya), at 4200 m
   - Only elytral stria 3 with setiferous punctures .......................... 2
2. Posterior lateral seta of pronotum present .......................... 3
   - Posterior lateral seta of pronotum absent .......................... 5
3. Lateral margin of elytra distinctly sinuate in front of the subdentiform basal angles (Fig. 3). Papua New Guinea ...................... 4
   - Lateral margin of elytra not perceptibly sinuate in front of the rather obtuse basal angles (Baehr 1995, figs 3, 4). Papua .......................... 5
4. Elytra with 5 discal punctures and setae (Fig. 3); size larger, length 4.4 mm; aedeagus unknown. Kubor Range at 3600 m
   ............................................ kubor n.
   - Elytra with 2–3 discal punctures and setae; size smaller, length < 4.0 mm; aedeagus with narrow, elongate and slightly sinuate apex and with two elongate sclerites in internal sac (Fig. 2). Bismarck Range (Mt. Wilhelm), above 3200 m ....... sedlaceki Darlington, 1971
5. Elytra with 4 discal punctures and setae; base of pronotum coarsely punctate; elytral striae well impressed, crenulate, intervals convex, stria 7 fairly well developed (Baehr 1995, fig. 3). Juliana Top (Gunung Mandala), eastern central Papua, at 3500 m ..................... julianae Baehr, 1995
   - Elytra with 2 discal punctures and setae; base of pronotum impunctate; elytral striae weakly impressed, outer striae consisting of rows of punctures only, intervals depressed, stria 7 scarcely indicated (Baehr 1995, fig. 4). Eipomek-Langda area, eastern central Papua, at 3500 m ..................... eipomeki Baehr, 1995
6. Basal angles of pronotum almost rectangular, lateral margin near base distinctly sinuate; aedeagus see Baehr (1995: figs 5, 7; 2002: fig. 1) .......................... 7
   - Basal angles of pronotum obtuse, lateral margin near base not or barely sinuate; aedeagus see Baehr (1992: fig. 1, 2; 1995: figs 11, 12; 1998: fig. 2; 2002: fig. 2) ........ 9
7. Size larger, length > 5 mm; surface at least with traces of microreticulation; aedeagus see Baehr (1995: figs 5, 7). Eastern central Papua, above 3200m ..................... 8
   - Size smaller, length < 4 mm; surface without traces of microreticulation; aedeagus see Baehr (2002: fig. 1). Bulldog Rd., Morobe Prov., eastern central Papua New Guinea, at 2550m ..................... cuccodoroi Baehr, 2002
8. Larger species, length > 5.7 mm; microreticulation on head and pronotum barely indicated, on elytra superficial, but present on apical part of elytra; basal angles of pronotum obtuse at apex, lateral margins distinct, explanate and slightly upturned; at least two or three median elytral striae deeply impressed, intervals distinctly convex (Baehr 1995: fig. 8); aedeagus see Baehr (1995: fig. 5). Gunung Elit, eastern central Papua, at 3200–3500 m .................. eliti Baehr, 1995
– Smaller species, length c. 5.3 mm; micro-reticulation distinct, even very conspicuous on elytra, but absent on apical part of elytra; basal angles of pronotum rectangular, lateral margins very narrow, barely explanate and upturned; elytral striae barely impressed, intervals depressed (Baehr 1995: fig. 9); aedeagus see Baehr (1995: fig. 7). Sape Valley, north of Juliana Top (Gunung Mandala), eastern central Papua, at 3400 m.

9. Aedeagus with short, wide, laminate apical plate that is bent down (Fig. 1; Baehr 1995: figs 10, 11); basal angles of pronotum obtuse, without any perceptible sinuosity (Fig. 3; Baehr 1995: figs 13, 14); either very small species (length < 3.8 mm) with short elytra, or larger species (length 4.6 mm) with elongate elytra.

– Aedeagus either with short, laminate apex that is markedly falciform (Baehr 1998: fig. 2) or with elongate, less wide apex that is slightly curved upwards at tip (Baehr 1992: fig. 2; 2002: fig. 2;); basal angles of pronotum obtuse, though commonly with perceptible sinuosity (Baehr 1992: fig. 1; 1998: fig. 1; 2002: fig. 4;), medium sized species (length 3.8–4.4 mm).

10. Smaller and shorter species, length < 3.8 mm, ratio l/w of elytra < 1.37; basal angles of pronotum almost rounded off; anterior transverse sulcus of pronotum weak or absent (Fig. 3; Baehr 1995: fig. 12); left paramere elongate, less curved (Fig. 1; Baehr 1995: fig. 10). Central Papua.

– Larger and more elongate species, length > 4.5 mm, ratio l/w of elytra > 1.50; basal angles of pronotum distinct, though obtuse (Baehr 1995: fig. 12); left paramere shorter, more curved (Baehr 1995: fig. 11). Langda area, eastern central Papua, at 2300 m.

Mecyclothorax lackneri sp. n.

Figs 1, 3, 5


Diagnosis

Small, black species, characterized by absence of the posterior lateral pronatal seta, very wide pronotum bearing markedly obtuse basal angles and impunctate base, short, very convex, somewhat oviform elytra with finely punctate striae, and glossy, though not iridescent surface. According to external morphological characters and to shape of aedeagus the species probably is most closely related to M. jiwikae Baehr, but is distinguished from this species: 1, by the wider pronotum having a wider base; 2, shorter elytra; and 3, a much shorter, differently shaped aedeagus bearing a wider apex and differently shaped sclerites in the internal sac.

Description

Measurements. Length: 3.55–3.75 mm; width: 1.60–1.75 mm. Ratios. Width prothorax/head: 1.32–1.34; width/length of prothorax: 1.32–1.34; width base/apex of prothorax: 1.11–1.14; width elytra/prothorax: 1.37–1.38; length/width of elytra: 1.27–1.32.

Colour. Very dark piceous to almost black (when
Table 1. Measurements and ratios of the *Mecyclothorax* species of New Guinea.

For better comparison of the species the measurements and ratios are compiled in the following table. For *M. toxopei* ratios were taken from the description, though this species is quite easily identified.

<table>
<thead>
<tr>
<th>Species</th>
<th>Body length (mm)</th>
<th>ratio width pronotum/head</th>
<th>ratio width/length of pronotum</th>
<th>ratio width base/apex pronotum</th>
<th>ratio width elytra/pronotum</th>
<th>ratio length/width elytra</th>
</tr>
</thead>
<tbody>
<tr>
<td>toxopei</td>
<td>4.7</td>
<td>1.32</td>
<td>1.29</td>
<td>0.98</td>
<td>1.50</td>
<td>1.41</td>
</tr>
<tr>
<td>sedlaceki</td>
<td>3.4–4.2</td>
<td>1.28–1.39</td>
<td>1.28–1.38</td>
<td>0.9–1.0</td>
<td>1.45–1.65</td>
<td>1.28–1.37</td>
</tr>
<tr>
<td>kubor</td>
<td>4.4</td>
<td>1.41</td>
<td>1.30</td>
<td>0.99</td>
<td>1.42</td>
<td>1.34</td>
</tr>
<tr>
<td>julianae</td>
<td>4.6</td>
<td>1.45</td>
<td>1.25</td>
<td>1.11</td>
<td>1.42</td>
<td>1.47</td>
</tr>
<tr>
<td>eipomeki</td>
<td>5.5</td>
<td>1.45</td>
<td>1.18</td>
<td>1.06</td>
<td>1.38</td>
<td>1.49</td>
</tr>
<tr>
<td>elii</td>
<td>5.8–6.3</td>
<td>1.45–1.54</td>
<td>1.15–1.19</td>
<td>1.09–1.12</td>
<td>1.38–1.40</td>
<td>1.42–1.45</td>
</tr>
<tr>
<td>saperi</td>
<td>5.25</td>
<td>1.33</td>
<td>1.13</td>
<td>0.96</td>
<td>1.50</td>
<td>1.39</td>
</tr>
<tr>
<td>cucodorni</td>
<td>3.5–3.8</td>
<td>1.47–1.56</td>
<td>1.21–1.27</td>
<td>1.04–1.07</td>
<td>1.33–1.35</td>
<td>1.30–1.32</td>
</tr>
<tr>
<td>jiwukiae</td>
<td>3.5–3.75</td>
<td>1.52–1.56</td>
<td>1.18–1.20</td>
<td>0.95–0.98</td>
<td>1.42–1.43</td>
<td>1.37</td>
</tr>
<tr>
<td>lackneri</td>
<td>3.55–3.75</td>
<td>1.67–1.72</td>
<td>1.32–1.34</td>
<td>1.11–1.14</td>
<td>1.37–1.38</td>
<td>1.27–1.32</td>
</tr>
<tr>
<td>langdae</td>
<td>4.6</td>
<td>1.54</td>
<td>1.17</td>
<td>1–05</td>
<td>1.38</td>
<td>1.52</td>
</tr>
<tr>
<td>bilisianus</td>
<td>4.0</td>
<td>1.54</td>
<td>1.17</td>
<td>1.01</td>
<td>1.45</td>
<td>1.42</td>
</tr>
<tr>
<td>riedeli</td>
<td>4.0–4.4</td>
<td>1.69</td>
<td>1.18–1.21</td>
<td>1.18–1.19</td>
<td>1.35–1.38</td>
<td>1.42–1.44</td>
</tr>
<tr>
<td>loebli</td>
<td>3.8–4.2</td>
<td>1.54–1.58</td>
<td>1.19–1.25</td>
<td>0.87–0.92</td>
<td>1.46–1.50</td>
<td>1.26–1.30</td>
</tr>
</tbody>
</table>

mature, three specimens), lateral margin and suture of elytra inconspicuously paler. Clypeus and labrum reddish-piceous, palpi and antennae dark yellow, though antenna from 4th antennomere slightly darker. Legs dark yellow, tibiae with a slightly darker ring in middle. Lower surface dark piceous to black, elytral epipleura reddish.


**Pronotum.** Large, wide, circular, considerably wider than long, disk fairly convex, laterally strongly and evenly curved, not excised in front of the basal angles. Widest diameter about at middle or slightly in front. Base distinctly wider than apex. Apex straight or faintly concave, apical angles distinctly projecting, at tip rounded off. Base almost straight, only laterally faintly oblique. Basal angles widely rounded off. Marginal channel narrow, little widened towards base, marginal channel shallow. Apex and base not margined. Anterior transverse sulcus complete, well impressed, posterior transverse sulcus faint. Median line well impressed, but anteriorly and posteriorly abbreviated. Basal grooves short, linear, rather deep. Basal area not explanate, almost on same level with disk, impunctate. Anterior marginal seta situated slightly in front of middle, slightly removed from lateral margin, posterior marginal seta absent. Surface impunctate, without any microreticulation, very glossy.

**Elytra.** Short and wide, dorsally markedly convex, widest diameter slightly behind middle. Humeri obtusely rounded, lateral margin evenly curved. Basal margin distinct, oblique, slightly sinuate, connected to scutellar striae. Striae except sutural stria slightly abbreviated at humerus, all striae except sutural stria also abbreviated at apex. Four median striae well impressed, anterior transverse sulcus complete, well impressed, posterior transverse sulcus faint. Median line well impressed, but anteriorly and posteriorly abbreviated. Basal grooves short, linear, rather deep. Basal area not explanate, almost on same level with disk, impunctate. Anterior marginal seta situated slightly in front of middle, slightly removed from lateral margin, posterior marginal seta absent. Surface impunctate, without any microreticulation, very glossy.
Lower surface. Largely impunctate, though mesepisternum with a row of very coarse punctures. Metepisternum about as long as wide. Sternum VII in male bisetose at apical margin, in female quadrisetose, also with 4 deeply impressed punctures and setae in middle slightly removed from apical margin.

Legs. Without striking features. Three basal tarsomeres of male anterior tarsus expanded and biserrately squamose.

Male genitalia (Fig. 1). Genital ring short and wide, fairly asymmetric, with very narrow lateral arms, probably due to recent emergence of the specimen. Aedeagus short and stout, conspicuously curved down towards apex, lower surface rather triangular. Apex markedly compressed, foliaceous, conspicuously spatulate, with convex tip, strongly sclerotized, slightly curved to left side and slightly concave on left side. Ostium almost completely situated on right side. Internal sac with several complexly folded sclerites. Left paramere large, though with narrow, elongate apex, unisetose at apex and without setae at lower margin. Right paramere narrower, likewise with elongate apex, bisetose at apex and with about 8 setae at lower margin, most of these situated in middle.

Female genitalia (Fig. 3). Gonocoxite 1 compact, at apical rim with a single elongate seta. Gonocoxite 2 moderately elongate, dentiform, with obtuse apex, with two moderately large ventro-lateral ensiform setae, one elongate dorso-median ensiform seta situated about in middle of gonocoxite, but apparently without any nematiform setae near apex. Lateral plate multiserrate at and below rim.

Variation. Apart from some variation in colour that is due to incomplete pigmentation, only some minor variation in relative shape of elytra was noted.

Distribution
Central Papua, former Irian Jaya, western New Guinea. Known only from type locality.

Collecting circumstances
Sifted, probably from leaf litter, in montane rainforest of medium altitude between 1700 and 2250 m.

Etymology
The name is a patronym in honour of the collector.

Relationships
According to external morphological characters and the shape and structure of the male genitalia, *M. lackneri* appears most closely related to *M. jiwikae* Baehr, which occurs not far from the type locality of *M. lackneri*.

**Mecyclothorax sedlaceki** Darlington

Fig. 2


This species was described from the female holotype sampled on Mt. Wilhelm at very high altitude (4250 m). A few additional specimens were now detected, likewise from Mt. Wilhelm, but from lower altitudes. The newly recorded specimens rather differ in their external morphological characters, e.g. body size, degree of microreticulation of elytral intervals, and number of punctures in 3rd interval which can be asymmetrically three. The male genitalia, however, are structurally quite similar in all dissected males, even when some minor differences in size and shape have been noted.

New records. 1♂, New Guinea Mt. Wilhelm, 3750 m. 24.VI. (RMNH); 1♂, New Guinea / NE / Mt. Wilhelm Field Stat. 3200 m 14.IX.1968 (HNMB); 1♂, New Guinea / NE / Mt. Wilhelm 3900 m 13–24.IX.1968 (CBM).

For better recognition and comparison with other species, measurements and ratios are given and the male aedeagus is described and figured.

Partial redescription

Measurements. Length: 3.4–4.2 mm; width: 1.5–1.95 mm. Ratios. Width prothorax/head: 1.28–1.40; width/length of prothorax: 1.28–1.38; width base/apex of prothorax: 0.9–1.0; width elytra/prothorax: 1.45–1.65; length/width of elytra: 1.28–1.37.

Male genitalia (Fig. 2). Genital ring short and wide, laterally convex, with very asymmetric base. Aedeagus comparatively elongate, gently curved to the right side, lower surface very gently concave. Apex straight, laterally compressed and rather narrow, somewhat foliaceous, with obtuse tip and a fine denticle on upper surface where the internal sac meets the sclerotized apex. Ostium largely situated on right side. Internal sac with several moderately sclerotized folds but without any denticles or heavily sclerotized plates. Left paramere large, with narrow, very elongate apex, bisetose at apex and without any setae at lower margin. Right paramere shorter and stouter, with much shorter apex, trisetose at apex, with dense setosity of rather elongate setae along almost the whole lower surface, a number of short setae on apical half of upper surface and some short setae on apical part of external surface.

Distribution
Bismarck Range, central Papua New Guinea. Known so far only from Mt. Wilhelm, between 3200 and
4250 m. The smallest specimen recorded has been found at the lowest altitude.

*Mecyclothorax kubor* sp. n.

**Fig. 4, 6**

**Type material.** Holotype: ♀, Papua New Guinea: “Museum Leiden TERR PAPUA & N GUINEA Kubor Range Mt. Kinkain. 3590 m. 15.VII.1963 W Vink” (RMNH).

**Diagnosis**

Medium sized, black, convex species, characterized by presence of the posterior lateral pronotal seta, wide pronotum bearing a distinct sinuation near base and rectangular basal angles. According to its body shape the species is closely related to *M. sedlaceki* Darlington from the neighbouring Bismarck Range, but is distinguished from that species by larger size and presence of five very distinct setiferous punctures near 3rd elytral stria.

**Description**

**Measurements.** Length: 4.4 mm; width: 2.0 mm. Ratios. Width prothorax/head: 1.41; width/length of prothorax: 1.30; width base/apex of prothorax: 0.99; width elytra/prothorax: 1.42; length/width of elytra: 1.34.

**Colour.** Black, palpi dark with pale apex, antennae reddish, legs piceous. Lower surface piceous, elytral epipleurae reddish.


**Elytra.** Short and wide, dorsally convex, widest diameter at middle. Humeri obtusely rounded, lateral margin evenly curved. Basal margin distinct, oblique, slightly sinuate, connected to scutellar striae. Striae except for sutural stria abbreviated at base, all striae except for inner two also abbreviated at apex. All striae except for 7th distinct though little or not impressed, very coarsely punctate. Intervals barely convex. 7th stria barely recognizable, consisting of spaced and extremely fine punctures. Scutellar striae fairly elongate, situated medially of the outturned sutural stria, consisting of mostly 4 coarse punctures. Marginal channel narrow. 3rd interval with 5 conspicuous setiferous punctures, all near 3rd stria, setae comparatively elongate. Near apex with a single setiferous puncture at end of 3rd stria. Marginal pores conspicuous, about 14 in a row that is barely interrupted in middle, marginal setae very elongate. Intervals impunctate, with extremely superficial traces of about isodiametric microreticulation which laterally becomes slightly more distinct. Surface glossy, though not iridescent. Posterior wings absent.

**Lower surface.** Largely impunctate, though mesepisternum with a row of very coarse punctures. Metepisternum about as long as wide. Abdominal sterna in parts microreticulate, the posterior ones also somewhat rugose. Sternum VII in the female quadrirsetose on apical margin, and with 4 deeply impressed punctures and setae in middle slightly removed from apical margin.

**Legs.** Without striking features.

**Female genitalia** (Fig. 6). Gonocoxite 1 compact, at apical rim with 4–5 rather stout setae. Gonocoxite 2 moderately elongate, dentiform, with acute apex, with two large and stout ventrolateral ensiform setae, one elongate dorsomedian ensiform seta situated about in middle of gonocoxite, and two short apical nematiform setae originating from a groove quite removed from apex. Lateral plate multisetose at and below rim.

**Variation.** Unknown.

**Male.** Unknown
**Distribution**
Kubor Range, central Papua New Guinea. Known only from the type locality.

**Collecting circumstances**
Largely unknown. Holotype sampled at 3730 m.

**Etymology**
The name refers to Kubor Range, home of this species, and should be treated as a noun in apposition.

**Relationships**
Closely related to *M. sedlaceki* Darlington of neighbouring Bismarck Range.

**Acknowledgements**
My sincere thanks are due to Jan Krikken and Fred van Assen of the National Museum of Natural History Naturalis, Leiden, and Rob de Vos of the Zoological Museum of the University of Amsterdam, for the loan of material.

**References**


Received: 28 September 2007
Accepted: 10 January 2008